

# Asbestos Survey

Bridge Deck Replacement  
Trabue Road  
Columbus, Ohio 43228

August 21, 2018

Terracon Project No. N4187145



**Prepared for:**

Franklin County Engineers  
Columbus, Ohio

**Prepared by:**

Terracon Consultants, Inc.  
Columbus, Ohio

Offices Nationwide  
Employee-Owned

Established in 1965  
[terracon.com](http://terracon.com)

# Terracon

Geotechnical   ■   Environmental   ■   Construction Materials   ■   Facilities



August 21, 2018

Franklin County Engineers  
970 Dublin Road  
Columbus, Ohio 43215

Attn: Mr. Adam Fowler  
P: (614) 525-6040  
E: [afowler@franklincountyengineer.org](mailto:afowler@franklincountyengineer.org)

Re: Asbestos Survey Report  
Bridge Deck Replacement  
Trabue Road  
Columbus, Ohio 43228  
Terracon Project No. N4187145

Dear Mr. Fowler:

Terracon Consultants, Inc. (Terracon) is pleased to submit the attached report for the above-referenced site to Franklin County Engineers. The purpose of this report is to present the results of an asbestos survey conducted on August 9, 2018. The services were conducted in general accordance with PO# 85401278, dated March 20, 2018. We understand this survey was requested due to the planned deck replacement pertaining to the Trabue Road Bridge located at the above-referenced address.

Terracon appreciates the opportunity to provide this service to Franklin County Engineers. If you have questions regarding this report, please contact the undersigned at 614-328-1196.

Sincerely,  
**Terracon Consultants, Inc.**

Chris Gauger  
Staff Asbestos Scientist  
OEPA AHES #35621

Joseph A. Tussey, CHMM  
Group Manager  
OEPA AHES #32388



## Asbestos Survey

Bridge Deck Replacement ■ Trabue Road, Columbus, OH

August 21, 2018 ■ Terracon Project No. N4187145



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**Trabue Road Bridge Deck Replacement**  
**Columbus, Ohio 43228**  
**Terracon Project No. N4187145**  
**August 21, 2018**

## **1.0 INTRODUCTION**

Terracon Consultants, Inc. (Terracon) conducted an asbestos survey of the Trabue Road Bridge located in Columbus, Ohio. The survey was conducted on August 9, 2018 by a United States Environmental Protection Agency (UEPA) accredited and Ohio Environmental Protection Agency (OEPA) certified Asbestos Hazard Evaluation Specialist (AHES) in general accordance with Franklin County Engineer's Purchase Order number PO# 85401278, dated March 20, 2018. Homogeneous areas of suspect asbestos-containing materials (ACM) were visually identified and documented. Although reasonable effort was made to survey accessible suspect materials, additional suspect but un-sampled materials could be located in voids or in other concealed areas. Suspect ACM samples were collected in general accordance with the sampling protocols outlined in USEPA 40 Code of Federal Regulations (CFR) Part 763, Subpart E, known as the Asbestos Hazard Emergency Response Act (AHERA). Samples were delivered to an accredited laboratory for analysis by Polarized Light Microscopy (PLM).

### **1.1 Project Objective**

We understand this survey was requested due to the planned deck replacement pertaining to the Trabue Road Bridge located in Columbus, Ohio. Asbestos surveys are required prior to renovation or demolition activities to satisfy requirements of EPA 40 CFR Part 61, Subpart M, the National Emission Standards for Hazardous Air Pollutants (NESHAP) regulation (as well as the state NESHAP equivalent).

### **1.2 Reliance**

This report is for the exclusive use of Franklin County Engineers (Client) for the project being discussed. Reliance by any other party on this report is prohibited without written authorization of Terracon and Franklin County Engineers. Reliance on this report by Franklin County Engineers and all authorized parties will be subject to the terms, conditions, and limitations stated in the this report.

## **2.0 STRUCTURE DESCRIPTION**

The subject bridge consists of concrete and metal guardrails, and is located on Trabue Road in Columbus, Ohio. The bridge surface area is approximately 15,398 square feet.

## **3.0 FIELD ACTIVITIES**

The survey was conducted by Mr. Chris Gauger, USEPA-accredited asbestos inspector and OEPA-certified AHES. A copy of Mr. Gauger's OEPA AHES credential is attached as Appendix D. The survey was conducted in general accordance with the sample collection protocols established in USEPA 40 CFR Part 763, Subpart E, Section 763.86, AHERA. A summary of survey activities is provided below.

### **3.1 Visual Assessment**

Survey activities were initiated with a visual assessment of the accessible portions of the subject Trabue Road Bridge. A homogeneous area (HA) consists of structure materials that appear similar throughout in terms of color and texture with consideration given to the date of application.

### **3.2 Physical Assessment**

A physical assessment of each HA of suspect ACM was conducted to assess the friability and condition of the materials. A friable material is defined by the EPA as a material which can be crumbled, pulverized, or reduced to powder by hand pressure when dry. Friability was assessed by physically touching suspect materials.

### **3.3 Sample Collection**

Based on results of the visual assessment, bulk samples of suspect ACM were collected in general accordance with USEPA AHERA sampling protocols. Samples of suspect materials were collected from randomly selected locations in each HA. Bulk samples were collected using wet methods as applicable to reduce the potential for fiber release. Samples were placed in sealable containers and labeled with unique sample numbers using an indelible marker.

The selection of sample locations and frequency of sampling were based on Terracon's observations and the assumption that like materials in the same area are homogeneous in content.

Terracon collected eighteen (18) bulk samples from six (6) HAs of suspect ACM. A summary of suspect ACM samples collected during the survey is included in Appendix B. Photographs showing HA examples are included in Appendix D.

### 3.4 Sample Analysis

Bulk samples were submitted under chain of custody to International Asbestos Testing Laboratories (IATL) of Mount Laurel, New Jersey for analysis by PLM with dispersion staining techniques per EPA methodology 600/R-93/116. The percentage of asbestos, where applicable, was determined by microscopic visual estimation or point counting. When applicable, samples determined by PLM to have a low asbestos content less than (<) 10%, the point count (PC) method was utilized for a more accurate quantification. IATL is accredited under the National Voluntary Laboratory Accreditation Program (NVLAP), accreditation number 101165-0.

## 4.0 REGULATORY OVERVIEW

The asbestos NESHAP (40 CFR Part 61, Subpart M) regulates asbestos fiber emissions and asbestos waste disposal practices. The asbestos NESHAP regulation also requires the identification and classification of existing ACM according to friability prior to demolition or renovation activity. Friable ACM is a material containing more than 1% asbestos that, when dry, can be crumbled, pulverized, or reduced to powder by hand pressure. All friable ACM is considered regulated asbestos containing material (RACM).

The asbestos NESHAP regulation classifies material subject to demolition or renovation as either RACM, Category I non-friable ACM, or Category II non-friable ACM. RACM includes all friable ACM (pre-disturbance), along with Category I non-friable ACM that becomes friable (during disturbance), and Category I non-friable ACM subject to sanding, grinding, cutting, or abrading, or Category II non-friable ACM with a high probability of becoming crumbled, pulverized, or reduced to powder by forces expected to act on the material during disturbance. Category I non-friable ACM are exclusively asbestos-containing packing's, gaskets, resilient floor coverings, and asphalt roofing products that contain more than 1% asbestos. Category II non-friable ACM are all other non-friable materials (other than Category I non-friable ACM) that contain more than 1% asbestos. Category II non-friable ACM generally includes (but is not limited to) cementitious material such as: cement pipes, cement siding (Transite™), cement panels, glazing, mortar, and grouts.

The Ohio Environmental Protection Agency (OEPA) adopted Chapter 3745-20 of the Ohio Administrative Code and implements the Asbestos NESAHP. The owner or operator must provide the OEPA district office or local air agency with written notification at least 10 business days prior to the commencement of renovation or demolition projects. The OEPA also regulates friable asbestos abatement activities, asbestos personnel training, and issuance of asbestos professional certifications under OAC 3745-22. OEPA audits asbestos abatement projects and responds to public health emergencies where friable ACMs has been released; licensed contractors must submit a 10-business day notification prior to an abatement project where friable ACMs in quantities greater than 50 linear or 50 square feet are being removed.

## **Asbestos Survey**

Bridge Deck Replacement ■ Trabue Road, Columbus, OH  
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The United States Occupational Safety and Health Administration (USOSHA) asbestos standard for construction (29 CFR 1926.1101) regulates workplace exposure to asbestos. The USOSHA standard requires that employee exposure to airborne asbestos must not exceed 0.1 fibers per cubic centimeter of air (0.1 f/cc) as an eight-hour time weighted average (TWA) and not exceed 1.0 fibers per cubic centimeter of air (1.0 f/cc) over a 30-minute time period known as an excursion limit (EL). The TWA and EL are known as USOSHA's asbestos permissible exposure limits (PELs). The USOSHA standard classifies construction and maintenance activities which could disturb ACM, and specifies work practices and precautions which employers must follow when engaging in each class of regulated work.

## **5.0 FINDINGS AND RECOMMENDATIONS**

Asbestos was not identified in the samples collected and analyzed with respect to this survey. A sample summary is included in Appendix A; the laboratory analytical report is included as Appendix B; and photographs showing HA examples are included in Appendix D.

Please note, however, the following limitations to this survey: 1) although reasonable effort was made to survey accessible suspect materials, additional suspect but un-sampled materials could be located in voids or in other concealed areas, and 2) this survey was limited to the decking of the bridge.

## **6.0 LIMITATIONS/GENERAL COMMENTS**

In addition to the limitations indicated in other sections of this report, if any, Terracon did not conduct sampling that required extensive demolition or destructive activities. Although reasonable efforts to access suspect materials within known areas of restricted access were made, confined spaces or areas that may pose a health or safety risk to Terracon personnel were not sampled. Sampling did not include suspect materials that could not be safely reached with available ladders/man-lifts.

This asbestos survey was conducted in a manner consistent with the level of care and skill ordinarily exercised by members of the profession currently practicing under similar conditions in the same locale. The results, findings, conclusions, and recommendations expressed in this report are based on conditions observed during our survey of the structure. The information contained in this report is relevant to the date on which this survey was conducted, and should not be relied upon to represent conditions at a later date. This report has been prepared on behalf of and exclusively for use by Franklin County Engineers for specific application to their project as discussed. This report is not a bidding document. Contractors or consultants reviewing this report must draw their own conclusions regarding further investigation or remediation deemed necessary. Terracon does not warrant the work of regulatory agencies, laboratories, or other third parties supplying information which may have been used in the preparation of this report. No warranty, express or implied is made.

**Asbestos Survey**

Bridge Deck Replacement ■ Trabue Road, Columbus, OH

August 21, 2018 ■ Terracon Project No. N4187145

**APPENDIX A**

**ASBESTOS SURVEY**  
**Trabue Road Avenue Bridge**  
**Columbus, Ohio 438228**  
**Terracon Project No. N4187145**  
**August 21 2018**

**ASBESTOS SURVEY SAMPLE SUMMARY**

Sample #		Sample Material Description	Sample Location	HA Location(s)	Results (% / Type of Asbestos)
HA #	SEQ. #				
01	CA301	Reflective Panel Caulking	Bridge East End, South Side, Parapet Wall	Throughout South Side Parapet Wall	None Detected
01	CA302	Reflective Panel Caulking	Bridge Center, South Side, Parapet Wall	Throughout South Side Parapet Wall	None Detected
01	CA303	Reflective Panel Caulking	Bridge West End, South Side, Parapet Wall	Throughout South Side Parapet Wall	None Detected
02	MA804	Parapet Wall Grout	Bridge East End, South Side, Parapet Wall	Throughout Parapet Wall	None Detected
02	MA805	Parapet Wall Grout	Bridge East End, North Side, Parapet Wall	Throughout Parapet Wall	None Detected
02	MA806	Parapet Wall Grout	Bridge West End, South Side, Parapet Wall	Throughout Parapet Wall	None Detected
03	CA607	Guard Rail Post Caulking	Bridge East End, South Side, Guard Rail	Throughout Guard Rail	None Detected
03	CA608	Guard Rail Post Caulking	Bridge East End, North Side, Guard Rail	Throughout Guard Rail	None Detected
03	CA609	Guard Rail Post Caulking	Bridge West End, South Side, Guard Rail	Throughout Guard Rail	None Detected
04	SC510	Bridge Expansion Joint	Bridge Deck, East End, South Side	Bridge North & South End Approach Areas	None Detected
04	SC511	Bridge Expansion Joint	Bridge Deck, East End, North Side	Bridge North & South End Approach Areas	None Detected

**Asbestos Survey**

Bridge Deck Replacement ■ Trabue Road, Columbus, OH

August 21, 2018 ■ Terracon Project No. N4187145



Sample #		Sample Material Description	Sample Location	HA Location(s)	Results (% / Type of Asbestos)
HA #	SEQ. #				
04	SC512	Bridge Expansion Joint	Bridge Deck, West End, South Side	Bridge North & South End Approach Areas	None Detected
05	MA513	Bridge Deck Asphalt	Bridge Deck, East End, South Side	Throughout Bridge Deck	None Detected
05	MA514	Bridge Deck Asphalt	Bridge Deck, East End, North Side	Throughout Bridge Deck	None Detected
05	MA515	Bridge Deck Asphalt	Bridge Deck, West End, South Side	Throughout Bridge Deck	None Detected
06	MA316	Bridge Deck Concrete	Bridge Deck Sidewalk, East End, South Side	Throughout Bridge Deck	None Detected
06	MA317	Bridge Deck Concrete	Bridge Deck Sidewalk, East End, North Side	Throughout Bridge Deck	None Detected
06	MA318	Bridge Deck Concrete	Bridge Deck Sidewalk, West End, South Side	Throughout Bridge Deck	None Detected

**Asbestos Survey**

Bridge Deck Replacement ■ Trabue Road, Columbus, OH

August 21, 2018 ■ Terracon Project No. N4187145



**APPENDIX B**

**ASBESTOS ANALYTICAL LABORATORY DATA**

### CERTIFICATE OF ANALYSIS

Client: Terracon  
800 Morrison Rd.  
Columbus OH 43230

Client: TER728

Report Date: 8/17/2018  
Report No.: 570527 - PLM Rev #2, 8/21/2018  
Project: Trabue Bridge Columbus, OH  
Project No.: N4187145

### PLM BULK SAMPLE ANALYSIS SUMMARY

**Lab No.:** 6581086  
**Client No.:** 01CA301

**Analyst Observation:** Tan Caulk  
**Client Description:** Reflective Panel Caulking

**Location:** Bridge East End, South Side,  
Parapet Wall  
**Facility:**

Percent Asbestos:  
*None Detected*

Percent Non-Asbestos Fibrous Material:  
None Detected

Percent Non-Fibrous Material:  
100

**Lab No.:** 6581087  
**Client No.:** 01CA302

**Analyst Observation:** Tan Caulk  
**Client Description:** Reflective Panel Caulking

**Location:** Bridge Center, South Side,  
Parapet Wall  
**Facility:**

Percent Asbestos:  
*None Detected*

Percent Non-Asbestos Fibrous Material:  
None Detected

Percent Non-Fibrous Material:  
100

**Lab No.:** 6581088  
**Client No.:** 01CA303

**Analyst Observation:** Tan Caulk  
**Client Description:** Reflective Panel Caulking

**Location:** Bridge West End, South Side,  
Parapet Wall  
**Facility:**

Percent Asbestos:  
*None Detected*

Percent Non-Asbestos Fibrous Material:  
None Detected

Percent Non-Fibrous Material:  
100

**Lab No.:** 6581089  
**Client No.:** 02MA804

**Analyst Observation:** Grey Rubber  
**Client Description:** Parapet Wall Grout

**Location:** Bridge East End, South Side,  
Parapet Wall  
**Facility:**

Percent Asbestos:  
*None Detected*

Percent Non-Asbestos Fibrous Material:  
None Detected

Percent Non-Fibrous Material:  
100

Different Material analyzed than listed on the sample log.

**Lab No.:** 6581090  
**Client No.:** 02MA805

**Analyst Observation:** Grey Rubber  
**Client Description:** Parapet Wall Grout

**Location:** Bridge East End, North Side,  
Parapet Wall  
**Facility:**

Percent Asbestos:  
*None Detected*

Percent Non-Asbestos Fibrous Material:  
None Detected

Percent Non-Fibrous Material:  
100

Different Material analyzed than listed on the sample log.

Please refer to the Appendix of this report for further information regarding your analysis.

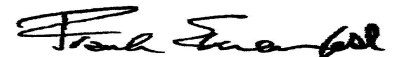
Date Received: 8/13/2018

Date Analyzed: 08/17/2018

Signature:

Analyst: Nick Daigle

Approved By:



Frank E. Ehrenfeld, III  
Laboratory Director

### CERTIFICATE OF ANALYSIS

Client: Terracon  
800 Morrison Rd.  
Columbus OH 43230  
  
Client: TER728

Report Date: 8/17/2018  
Report No.: 570527 - PLM Rev #2, 8/21/2018  
Project: Trabue Bridge Columbus, OH  
Project No.: N4187145

### PLM BULK SAMPLE ANALYSIS SUMMARY

<b>Lab No.:</b> 6581091	<b>Analyst Observation:</b> Grey Rubber	<b>Location:</b> Bridge West End, South Side,
<b>Client No.:</b> 02MA806	<b>Client Description:</b> Parapet Wall Grout	Parapet Wall
<b>Percent Asbestos:</b> <i>None Detected</i>	<b>Percent Non-Asbestos Fibrous Material:</b> None Detected	<b>Facility:</b> <b>Percent Non-Fibrous Material:</b> 100

Different Material analyzed than listed on the sample log.

<b>Lab No.:</b> 6581092	<b>Analyst Observation:</b> Grey Caulk	<b>Location:</b> Bridge East End, South Side,
<b>Client No.:</b> 03CA607	<b>Client Description:</b> Guard Rail Post Caulking	Guard Rail
<b>Percent Asbestos:</b> <i>None Detected</i>	<b>Percent Non-Asbestos Fibrous Material:</b> None Detected	<b>Facility:</b> <b>Percent Non-Fibrous Material:</b> 100


<b>Lab No.:</b> 6581093	<b>Analyst Observation:</b> Grey Caulk	<b>Location:</b> Bridge East End, North Side,
<b>Client No.:</b> 03CA608	<b>Client Description:</b> Guard Rail Post Caulking	Guard Rail
<b>Percent Asbestos:</b> <i>None Detected</i>	<b>Percent Non-Asbestos Fibrous Material:</b> None Detected	<b>Facility:</b> <b>Percent Non-Fibrous Material:</b> 100

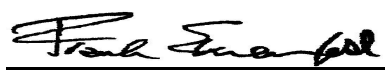
<b>Lab No.:</b> 6581094	<b>Analyst Observation:</b> Grey Caulk	<b>Location:</b> Bridge West End, South Side,
<b>Client No.:</b> 03CA609	<b>Client Description:</b> Guard Rail Post Caulking	Guard Rail
<b>Percent Asbestos:</b> <i>None Detected</i>	<b>Percent Non-Asbestos Fibrous Material:</b> None Detected	<b>Facility:</b> <b>Percent Non-Fibrous Material:</b> 100

<b>Lab No.:</b> 6581095	<b>Analyst Observation:</b> Black Expansion Joint	<b>Location:</b> Bridge Deck, East End, South
<b>Client No.:</b> 04SC510	<b>Client Description:</b> Bridge Expansion Joint	Side
<b>Percent Asbestos:</b> <i>None Detected</i>	<b>Percent Non-Asbestos Fibrous Material:</b> None Detected	<b>Facility:</b> <b>Percent Non-Fibrous Material:</b> 100

<b>Lab No.:</b> 6581096	<b>Analyst Observation:</b> Black Expansion Joint	<b>Location:</b> Bridge Deck, East End, North
<b>Client No.:</b> 04SC511	<b>Client Description:</b> Bridge Expansion Joint	Side
<b>Percent Asbestos:</b> <i>None Detected</i>	<b>Percent Non-Asbestos Fibrous Material:</b> None Detected	<b>Facility:</b> <b>Percent Non-Fibrous Material:</b> 100

Please refer to the Appendix of this report for further information regarding your analysis.

Date Received: 8/13/2018  
Date Analyzed: 08/17/2018  
Signature:   
Analyst: Nick Daigle

Approved By:   
Frank E. Ehrenfeld, III  
Laboratory Director

CERTIFICATE OF ANALYSIS


Client: Terracon  
800 Morrison Rd.  
Columbus OH 43230  
  
Client: TER728

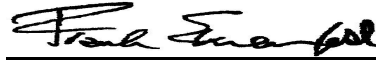
Report Date: 8/17/2018  
Report No.: 570527 - PLM Rev #2, 8/21/2018  
Project: Trabue Bridge Columbus, OH  
Project No.: N4187145

PLM BULK SAMPLE ANALYSIS SUMMARY

<b>Lab No.:</b> 6581097 <b>Client No.:</b> 04SC512	<b>Analyst Observation:</b> Black Expansion Joint <b>Client Description:</b> Bridge Expansion Joint	<b>Location:</b> Bridge Deck, West End, South Side <b>Facility:</b> <b>Percent Non-Fibrous Material:</b>
<b>Percent Asbestos:</b> <i>None Detected</i>	<b>Percent Non-Asbestos Fibrous Material:</b> None Detected	<b>Percent Non-Fibrous Material:</b> 100
<b>Lab No.:</b> 6581098 <b>Client No.:</b> 05MA513	<b>Analyst Observation:</b> Black Asphalt <b>Client Description:</b> Bridge Deck Asphalt	<b>Location:</b> Bridge Deck, East End, South Side <b>Facility:</b> <b>Percent Non-Fibrous Material:</b>
<b>Percent Asbestos:</b> <i>None Detected</i>	<b>Percent Non-Asbestos Fibrous Material:</b> None Detected	<b>Percent Non-Fibrous Material:</b> 100
<b>Lab No.:</b> 6581099 <b>Client No.:</b> 05MA514	<b>Analyst Observation:</b> Black Asphalt <b>Client Description:</b> Bridge Deck Asphalt	<b>Location:</b> Bridge Deck, East End, North Side <b>Facility:</b> <b>Percent Non-Fibrous Material:</b>
<b>Percent Asbestos:</b> <i>None Detected</i>	<b>Percent Non-Asbestos Fibrous Material:</b> None Detected	<b>Percent Non-Fibrous Material:</b> 100
<b>Lab No.:</b> 6581100 <b>Client No.:</b> 05MA515	<b>Analyst Observation:</b> Black Asphalt <b>Client Description:</b> Bridge Deck Asphalt	<b>Location:</b> Bridge Deck, West End, South Side <b>Facility:</b> <b>Percent Non-Fibrous Material:</b>
<b>Percent Asbestos:</b> <i>None Detected</i>	<b>Percent Non-Asbestos Fibrous Material:</b> None Detected	<b>Percent Non-Fibrous Material:</b> 100
<b>Lab No.:</b> 6581101 <b>Client No.:</b> 06MA316	<b>Analyst Observation:</b> Tan Concrete <b>Client Description:</b> Bridge Deck Concrete	<b>Location:</b> Bridge Deck Sidewalk, East End, South Side <b>Facility:</b> <b>Percent Non-Fibrous Material:</b>
<b>Percent Asbestos:</b> <i>None Detected</i>	<b>Percent Non-Asbestos Fibrous Material:</b> None Detected	<b>Percent Non-Fibrous Material:</b> 100
<b>Lab No.:</b> 6581102 <b>Client No.:</b> 06MA317	<b>Analyst Observation:</b> Tan Concrete <b>Client Description:</b> Bridge Deck Concrete	<b>Location:</b> Bridge Deck Sidewalk, East End, North Side <b>Facility:</b> <b>Percent Non-Fibrous Material:</b>
<b>Percent Asbestos:</b> <i>None Detected</i>	<b>Percent Non-Asbestos Fibrous Material:</b> None Detected	<b>Percent Non-Fibrous Material:</b> 100

Please refer to the Appendix of this report for further information regarding your analysis.

Date Received: 8/13/2018  
Date Analyzed: 08/17/2018  
Signature:   
Analyst: Nick Daigle

Approved By:   
Frank E. Ehrenfeld, III  
Laboratory Director

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CERTIFICATE OF ANALYSIS

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Client: Terracon  
800 Morrison Rd.  
Columbus OH 43230

Client: TER728

Report Date: 8/17/2018  
Report No.: 570527 - PLM Rev #2, 8/21/2018  
Project: Trabue Bridge Columbus, OH  
Project No.: N4187145

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PLM BULK SAMPLE ANALYSIS SUMMARY

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Lab No.: 6581103  
Client No.: 06MA318

Analyst Observation: Tan Concrete  
Client Description: Bridge Deck Concrete

Location: Bridge Deck Sidewalk, West End,  
South Side

Facility:

Percent Asbestos:  
*None Detected*

Percent Non-Asbestos Fibrous Material:  
None Detected

Percent Non-Fibrous Material:  
100

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Please refer to the Appendix of this report for further information regarding your analysis.

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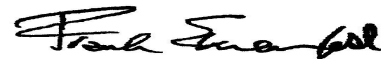
Date Received: 8/13/2018

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Signature:

Analyst: Nick Daigle

Approved By:



Frank E. Ehrenfeld, III  
Laboratory Director

---

CERTIFICATE OF ANALYSIS

---

Client: Terracon  
800 Morrison Rd.  
Columbus OH 43230  
  
Client: TER728

Report Date: 8/17/2018  
Report No.: 570527 - PLM  
Project: Trabue Bridge Columbus, OH  
Project No.: N4187145

## Appendix to Analytical Report

**Customer Contact:**

**Method:** US EPA 600, R93-116

This appendix seeks to promote greater understanding of any observations, exceptions, special instructions, or circumstances that the laboratory needs to communicate to the client concerning the above samples. The information below is used to help promote your ability to make the most informed decisions for you and your customers. Please note the following points of contact for any questions you may have.

**iATL Customer Service:** customerservice@iatl.com

**iATL Office Manager:** cdavis@iatl.com

**iATL Account Representative:** Cassie Doherty

**Sample Login Notes:** See Batch Sheet Attached

**Sample Matrix:** Bulk Building Materials

**Exceptions Noted:** See Following Pages

### General Terms, Warrants, Limits, Qualifiers:

General information about iATL capabilities and client/laboratory relationships and responsibilities are spelled out in iATL policies that are listed at [www.iATL.com](http://www.iATL.com) and in our Quality Assurance Manual per ISO 17025 standard requirements. The information therein is a representation of iATL definitions and policies for turnaround times, sample submittal, collection media, blank definitions, quantification issues and limit of detection, analytical methods and procedures, sub-contracting policies, results reporting options, fees, terms, and discounts, confidentiality, sample archival and disposal, and data interpretation.

iATL warrants the test results to be of a precision normal for the type and methodology employed for each sample submitted. iATL disclaims any other warrants, expressed or implied, including warranty of fitness for a particular purpose and warranty of merchantability. iATL accepts no legal responsibility for the purpose for which the client uses test results. Any analytical work performed must be governed by our Standard Terms and Conditions. Prices, methods and detection limits may be changed without notification. Please contact your Customer Service Representative for the most current information.

This confidential report relates only to those item(s) tested and does not represent an endorsement by NIST-NVLAP, AIHA LAP LLC, or any agency of local, state or province governments nor of any agency of the U.S. government.

This report shall not be reproduced except in full, without written approval of the laboratory.

### Information Pertinent to this Report:

Analysis by US EPA 600 93-116: Determination of Asbestos in Bulk Building Materials by Polarized Light Microscopy (PLM).

#### Certifications:

- NIST-NVLAP No. 101165-0
- NYSDOH-ELAP No. 11021
- AIHA-LAP, LLC No. 100188

Quantification at <0.25% by volume is possible with this method. (PC) Indicates Stratified Point Count Method performed. (PC-Trace) means that asbestos was detected but is not quantifiable under the Point Counting regimen. PC Trace represents a <0.25% amount. Analysis includes all distinct separable layers in accordance with EPA 600 Method. If not reported or otherwise noted, layer is either not present or the client has specifically requested that it not be analyzed (ex. analyze until positive instructions). Small asbestos fibers may be missed by PLM due to resolution limitations of the optical microscope. Therefore, PLM is not consistently reliable in detecting asbestos in non-friable organically bound (NOB) materials. Quantitative transmission electron microscopy (TEM) is currently the only method that can pronounce materials as non-asbestos containing.

Analytical Methodology Alternatives: Your initial request for analysis may not have accounted for recent advances in regulatory requirements or advances in technology that are routinely used in similar situations for other qualified projects. You may have the option to explore additional analysis for further information. Below are a few options, listed as the matrix followed by the appropriate methodology. Also included are links to more information on our website.

Bulk Building Materials that are Non-Friable Organically Bound (NOB) by Gravimetric Reduction techniques employing PLM and TEM: ELAP 198.6 (PLM-NOB), ELAP 198.4 (TEM-NOB)

Loose Fill Vermiculite Insulation, Attic Insulation, Zonolite (copyright), etc.: US EPA 600 R-4/004 (multi-tiered analytical process)

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CERTIFICATE OF ANALYSIS

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Client: Terracon  
800 Morrison Rd.  
Columbus OH 43230

Client: TER728

Report Date: 8/17/2018  
Report No.: 570527 - PLM  
Project: Trabue Bridge Columbus, OH  
Project No.: N4187145

Sprayed On Insulation/Fireproofing with Vermiculite (SOF-V): ELAP 198.8 (PLM-SOF-V)

Soil, sludge, sediment, aggregate, and like materials analyzed for asbestos or other elongated mineral particles (ex. erionite, etc.): ASTM D7521, CARB 435, and other options available

Asbestos in Surface Dust according to one of ASTM's Methods (very dependent on sampling collection technique – by TEM): ASTM D 5755, D5756, or D6480

Various other asbestos matrices (air, water, etc.) and analytical methods are available.

**Disclaimers / Qualifiers:**

There may be some samples in this project that have a "NOTE:" associated with a sample result. We use added disclaimers or qualifiers to inform the client about something that requires further explanation. Here is a list with highlighted disclaimers that may be pertinent to this project. For a full explanation of these and other disclaimers, please inquire at [customerservice@iatl.com](mailto:customerservice@iatl.com).

- 1) Note: No mastic provided for analysis.
- 2) Note: Insufficient mastic provided for analysis.
- 3) Note: Insufficient material provided for analysis.
- 4) Note: Insufficient sample provided for QC reanalysis.
- 5) Note: Different material than indicated on Sample Log / Description.
- 6) Note: Sample not submitted.
- 7) Note: Attached to asbestos containing material.
- 8) Note: Received wet.
- 9) Note: Possible surface contamination.
- 10) Note: Not building material. 1% threshold may not apply.
- 11) Note: Recommend TEM-NOB analysis as per EPA recommendations.
- 12) Note: Asbestos detected but not quantifiable.
- 13) Note: Multiple identical samples submitted, only one analyzed.
- 14) Note: Analyzed by EPA 600/R-93/116. Point Counting detection limit at 0.080%.
- 15) Note: Analyzed by EPA 600/R-93/116. Point Counting detection limit at 0.125%.
- 16) Note: This sample contains >10% vermiculite mineral. See Appendix for Recommendations for Vermiculite Analysis.

**Recommendations for Vermiculite Analysis:**

Several analytical protocols exist for the analysis of asbestos in vermiculite. These analytical approaches vary depending upon the nature of the vermiculite mineral being tested (e.g. un-processed gänge, homogeneous exfoliated books of mica, or mixed mineral composites). Please contact your client representative for pricing and turnaround time options available.

iATL recommends initial testing using the EPA 600/R-93/116 method. This method is specifically designed for the analysis of asbestos in bulk building materials. It provides an acceptable starting point for primary screening of vermiculite for possible asbestos.

Results from this testing may be inconclusive. EPA suggests proceeding to a multi-tiered analysis involving wet separation techniques in conjunction with PLM and TEM gravimetric analysis (EPA 600/R-04/004).

For New York State customers, NYSDOH requires disclaimers and qualifiers for various vermiculite containing samples that direct analysis via ELAP198.6 and ELAP198.8 for samples that contain >10% vermiculite mineral where ELAP198.6 may be used to evaluate the asbestos content of the material. However, any test result using ELAP198.6 will be reported with the following disclaimer: "ELAP198.6 method does not remove vermiculite and may underestimate the level of asbestos present in a sample containing >10% vermiculite."

Further information on this method and other vermiculite and asbestos issues can be found at the following: Agency for Toxic Substances and Disease Registry (ATSDR) [www.atsdr.cdc.gov](http://www.atsdr.cdc.gov), United States Geological Survey (USGS) [www.minerals.usgs.gov/minerals/](http://www.minerals.usgs.gov/minerals/), US EPA [www.epa.gov/asbestos](http://www.epa.gov/asbestos). The USEPA also has an informative brochure "Current Best Practices for Vermiculite Attic Insulation" EPA 747F03001 May 2003, that may assist the health and remediation professional.

The following is a summary of the analytical process outlines in the EPA 600/R-04/004 Method:

- 1) **Analytical Step/Method:** Initial Screening by PLM, EPA 600R-93/116  
**Requirements/Comments:** Minimum of 0.1 g of sample. ~0.25% LOQ for most samples.
- 2) **Analytical Step/Method:** Wet Separation by PLM Gravimetric Technique, EPA R-04/004  
**Requirements/Comments:** Minimum 50g\*\* of dry sample. Analysis of "Sinks" only.

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CERTIFICATE OF ANALYSIS

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Client: Terracon  
800 Morrison Rd.  
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Report Date: 8/17/2018  
Report No.: 570527 - PLM  
Project: Trabue Bridge Columbus, OH  
Project No.: N4187145

3)**Analytical Step/Method:** Wet Separation by PLM Gravimetric Technique, EPA R-04/004  
**Requirements/Comments:** Minimum 50g\*\* of dry sample. Analysis of "Floats" only.

4)**Analytical Step/Method:** Wet Separation by TEM Gravimetric Technique, EPA R-04/004  
**Requirements/Comments:** Minimum 50g\*\* of dry sample. Analysis of "Sinks" only.

5)**Analytical Step/Method:** Wet Separation by TEM Gravimetric Technique, EPA R-04/004  
**Requirements/Comments:** Minimum 50g\*\* of dry sample. Analysis of "Suspension" only.

LOQ, Limit of Quantitation estimates for mass and volume analyses.

\*With advance notice and confirmation by the laboratory.

\*\*Approximately 1 Liter of sample in double-bagged container (~9x6 inch bag of sample).

## Chain of Custody

—Bulk Asbestos—

### Contact Information

Client Company: Terracon Consultants, Inc.  
Office Address: 800 Morrison Road  
City, State, Zip: Columbus, OH 43230  
Fax Number: n/a  
Email Address: Asbestos-IH@terracon.com

Project Number: N4187145  
Project Name: Trabue Bridge Columbus, OH  
Primary Contact: John Hearn  
Office Phone: 614-328-1196  
Cell Phone: \_\_\_\_\_

### PLM Instructions:

- ☒ PLM: Bulk Asbestos Building Materials EPA 600 R-93/116, 1993
- ☐ PLM: Bulk Asbestos Building Materials EPA 600 M-4/82-020, 1982
- ☐ PLM: Bulk Asbestos Building Materials NIOSH 9002, 1985
- ☐ PLM: Bulk Asbestos Building Materials NYSDOH-ELAP 198.1, 2002
- ☐ PLM: Bulk Asbestos Building Materials NYSDOH-ELAP 198.6, 2010
- ☐ TEM: Bulk Asbestos Building Materials NYSDOH-ELAP 198.4, 2009

#### ☒ PLM: Point Counting

- ☐ PC: via ELAP 198.1
- ☒ PC: 400 Points
- ☐ PC: 800 Points \*
- ☐ PC: 1600 Points \*

#### ☒ PLM: Instructions for Multi-Layered Samples

- ☒ Analyze and Report All Separable Layers per EPA 600
- ☐ Report Composite for Drywall Systems per NESHAP
- ☐ Report All Layers and Composite Where Applicable
- ☐ Only Analyze and Report Specifically Noted Layer

#### ☐ PLM: Analyze Until Positive (Positive Stop)

- ☐ AUP: by Homogenous Area as Noted
- ☐ AUP: by Material Type as Noted

#### ☐ PLM: NOB via 198.6

- ☐ PLM: Friable via EPA 600 2.3
- ☐ If <1% by PLM, to TEM via 198.4 \*
- ☐ If <1% by PLM, Hold for Instructions

#### ☐ PLM: Non-Building Material \*\*\* (Dust, Wipe, Tape)

- ☐ Soil or Vermiculite Analysis \*
- ☐ CARB 435

### Special Instructions:

\* Additional charge and turnaround may be required

\*\* Alternative Method (ex: EPA 600/R-04/004) may be recommended by Laboratory

### Turnaround Time

Preliminary Results Requested Date: \_\_\_\_\_

Specific date / time

☐ 10 Day ☒ 5 Day ☐ 3 Day ☐ 2 Day ☐ 1 Day\* ☐ 12 Hour\*\* ☐ 6 Hour\*\* ☐ RUSH\*\*

\* End of next business day unless otherwise specified. \*\* Matrix Dependent. \*\*\*Please notify the lab before shipping\*\*\*

### Chain of Custody

Relinquished (Name/Organization): Chris Gauger/ Terracon

Date: 8/10/18

Time: 1:00pm

Received (Name / iATL): \_\_\_\_\_

Date: \_\_\_\_\_

Time: \_\_\_\_\_

Sample Login (Name / iATL): \_\_\_\_\_

Date: \_\_\_\_\_

Time: \_\_\_\_\_

Analysis(Name(s) / iATL): ND 8/17/18

Date: \_\_\_\_\_

Time: \_\_\_\_\_

QA/QC Review (Name / iATL): \_\_\_\_\_

Date: 8-20-18

Time: AUG 13 2018

Archived / Released: \_\_\_\_\_ QA/QC InterLAB Use: \_\_\_\_\_

Date: \_\_\_\_\_

Time: \_\_\_\_\_

# SUSPECT ACM - BULK MATERIAL SAMPLE LOG

Page 1 of 1

Date: 8/9/18  
 Inspector: Chris Gauger  
 Project: Trabue Road Bridge Asbestos Survey  
 Project #: N4187145

**Terracon**

800 Morrison Road  
 Columbus, Ohio 43230  
 (614) 328.1196

HA#	Sample #	Sample Material Description	Sample Location	HA Location(s)	Results (% Asbestos)
01	01CA301	Reflective Panel Caulking	Bridge East End, South Side, Parapet Wall	Throughout South Side Parapet Wall	6581036
01	01CA302	Reflective Panel Caulking	Bridge Center, South Side, Parapet Wall	Throughout South Side Parapet Wall	6581037
01	01CA303	Reflective Panel Caulking	Bridge West End, South Side, Parapet Wall	Throughout South Side Parapet Wall	6581038
02	02MA804	Parapet Wall Grout	Bridge East End, South Side, Parapet Wall	Throughout Parapet Wall	6581039
02	02MA805	Parapet Wall Grout	Bridge East End, North Side, Parapet Wall	Throughout Parapet Wall	6581090
02	02MA806	Parapet Wall Grout	Bridge West End, South Side, Parapet Wall	Throughout Parapet Wall	6581091
03	03CA607	Guard Rail Post Caulking	Bridge East End, South Side, Guard Rail	Throughout Guard Rail	6581092
03	03CA608	Guard Rail Post Caulking	Bridge East End, North Side, Guard Rail	Throughout Guard Rail	6581093
03	03CA609	Guard Rail Post Caulking	Bridge West End, South Side, Guard Rail	Throughout Guard Rail	6581094
04	04SC510	Bridge Expansion Joint	Bridge Deck, East End, South Side	Bridge North & South End Approach Area	6581095
04	04SC511	Bridge Expansion Joint	Bridge Deck, East End, North Side	Bridge North & South End Approach Area	6581096
04	04SC512	Bridge Expansion Joint	Bridge Deck, West End, South Side	Bridge North & South End Approach Area	6581097
05	05MA513	Bridge Deck Asphalt	Bridge Deck, East End, South Side	Throughout Bridge Deck	6581098
05	05MA514	Bridge Deck Asphalt	Bridge Deck, East End, North Side	Throughout Bridge Deck	6581099
05	05MA515	Bridge Deck Asphalt	Bridge Deck, West End, South Side	Throughout Bridge Deck	6581100
06	06MA316	Bridge Deck Concrete	Bridge Deck Sidewalk, East End, South Side	Throughout Bridge Deck	6581101
06	06MA317	Bridge Deck Concrete	Bridge Deck Sidewalk, East End, North Side	Throughout Bridge Deck	6581102
06	06MA318	Bridge Deck Concrete	Bridge Deck Sidewalk, West End, South Side	Throughout Bridge Deck	6581103

**Asbestos Survey**

Bridge Deck Replacement ■ Trabue Road, Columbus, OH

August 21, 2018 ■ Terracon Project No. N4187145



**APPENDIX C**

**LICENSES AND CERTIFICATIONS**



John R. Kasich, Governor  
Mary Taylor, Lt. Governor  
Craig W. Butler, Director

June 19, 2018

Christopher L Gauger  
531 Ely Court North  
Powell OH 43065

RE: Asbestos Hazard Evaluation Specialist  
Certification Number: ES35621  
Expiration Date: 06/15/2019

Dear Christopher L Gauger:

This letter and enclosed certification card approves your request to be certified as an Asbestos Hazard Evaluation Specialist. You must present your card upon request at any project site while performing duties. Copies of cards are not acceptable as proof of certification.

This certification may be revoked by the Director of the Environmental Protection Agency for violation of any of the requirements of 3745-22 or 3745-20 of the Ohio Administrative Code.

If you have any questions, please call 614-644-0226.

Sincerely,

Mark Needham  
Manager, Asbestos Program  
Division of Air Pollution Control

50 West Town Street • Suite 700 • P.O. Box 1049 • Columbus, OH 43261  
epa.ohio.gov • (614) 644-3020 • (614) 644-3188

State of Ohio  
Environmental Protection Agency  
Asbestos Program

Asbestos Hazard Evaluation Specialist

Christopher L Gauger  
531 Ely Court North  
Powell OH 43065

Certification Number  
ES35621

Expiration Date  
06/15/2019

DOB: 08/21/1984

This certification is issued pursuant to Revised Code Chapter 3710 and Administrative Code Chapter 3745-22.

This card is not valid if altered.

**Asbestos Survey**

Bridge Deck Replacement ■ Trabue Road, Columbus, OH

August 21, 2018 ■ Terracon Project No. N4187145



**APPENDIX D**

**PHOTOGRAPHS**



**Photo #1:** View of HA #1 - Non-asbestos-containing reflective panel caulking.

**Asbestos Survey**

Bridge Deck Replacement ■ Trabue Road, Columbus, OH

August 21, 2018 ■ Terracon Project No. N4187145



**Photo #2:** View of HA #2 - Non-asbestos-containing parapet wall grout.

**Asbestos Survey**

Bridge Deck Replacement ■ Trabue Road, Columbus, OH  
August 21, 2018 ■ Terracon Project No. N4187145



**Photo #3:** View of HA #3 - Non-asbestos-containing guard rail post caulking.

## Asbestos Survey

Bridge Deck Replacement ■ Trabue Road, Columbus, OH  
August 21, 2018 ■ Terracon Project No. N4187145



**Photo #4:** View of HA #4 - Non-asbestos-containing bridge expansion joint.

**Asbestos Survey**

Bridge Deck Replacement ■ Trabue Road, Columbus, OH

August 21, 2018 ■ Terracon Project No. N4187145



**Photo #5:** View of HA #5 - Non-asbestos-containing bridge deck asphalt.

**Asbestos Survey**

Bridge Deck Replacement ■ Trabue Road, Columbus, OH

August 21, 2018 ■ Terracon Project No. N4187145



**Photo #6:** View of HA #6 - Non-asbestos-containing bridge deck concrete.